Industrial Finishing

Reg. U. S. Pat. Off.

Devoted to Product Finishing in the Factory

Vol. IX, No. 5 **MARCH, 1933** **$2.00 a Year**

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Letters—— from I. F. Readers

The names and addresses of those whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor

Quick-Drying Finish

At the suggestion of our painter, who is a reader of your magazine, we would like to have your opinion as to the best finish to be applied to red gum and bass mouldings ⅞x ½-in. which are used around the outer edge of a game table that is painted green. We should like a quick-drying finish stain to be applied with a single coat, if possible. As the tables are to be painted green and placed on sale we should like a finish pleasing to the most people and yet as inexpensive as possible.—K. X. & S. Co. (Com. Auto Body Builders).

Carriage Bolt Finishing

We have a problem of finishing carriage bolts in baking enamel that is troubling us, inasmuch as we have had no experience in production on this particular class of work. Our problem is coating a large quantity of carriage bolts with baking enamel, and we wonder what the accepted production method for this class of enameling is.—W. & E. Inc. (Castings; Machinists).

Color Steel Chemically

We have read with interest the article "Black Finish on Metal Chemically" by C. F. Scribner, Industrial Engineer, in the February issue, page 15.

We have a problem on which we would like to secure information and are communicating with you in the hope that you can furnish us with data, or refer us to someone who can supply us with same. Perhaps, Mr. Scribner has data available on the subject.

In connection with our line of continuous electric heat treating furnaces, we are interested in securing information and data on a gaseous media for coloring steel blue at a hardening temperature ranging from 1300°F. to 1500°F., or at tempering temperatures less than 500°F., for plain carbon steel. It is our intention to use a gas of this nature in the furnace chamber in place of the reducing atmosphere which we now employ to prevent oxidation.

While we have considerable information on hand regarding baths for coloring steel, we are particularly interested in a gaseous or chemical media for use with our present standard equipment.—H. O. S. Inc. (Electrical & Mechanical Engineers).

Check Remover

Kindly let us know the name and address of a company manufacturing what is known as an amalgamator or check remover for finished surfaces.—C. O. & S. F. Ltd. (Furniture).

Speedboat Finish

It has been my belief that you know more about "finishing" woodwork than any other people in the country. At least, you are posted on the latest and best methods for doing things of this sort, so with the hope that I am not to be disillusioned, I present my problem to you.

Together with another young man,

ROWCO
2-in-1
FILLERSTAIN

INCREASED production in a large New England factory* from 300 to 1,000 children's desks per week.

It fills and stains in one coat - - one operation. A better finish - - IN LESS TIME - - at less cost.

Supplied in different shades of Maple, Walnut, Mahogany and Oak.

It's your loss if you don't investigate this 2-in-1 Fillerstain at once!

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ROWE PAINT CO.
43-42 Tenth Street
Long Island City, N. Y.

SUNOCO SPIRITS

... an ideal thinner for
FURNITURE FINISHES

Works efficiently with varnish, fillers, oil stains, primers and enamels. Ideal reducer for spraying, brushing, dipping or tumbling. High solvency prevents separation, seeding or thickening, dries evenly, quickly and safely. No greasy residue. Low cost, economical in use. Write us.

SUN OIL COMPANY
1608 Walnut St., Philadelphia, Pa.
Producers of
BLUE SUNOCO MOTOR FUEL
Branches and Warehouses
in 100 Principal Cities

I have just finished planking a speedboat with cypress. It has now come time to douse it with hot linseed and kerosene, but where we go from there, we don't know. We want, if such a thing is possible, to finish the surface so as to appear to be mahogany, but what type of filler, stain, wiper, spar varnish, or other material to use we don't know. Nor do we know when and how to take these various steps. Can you and will you help us in our quandary?—R. F. S.

Broom Handle Finishing

We have a customer who would like to know the process used in finishing broom handles. If you can secure this information for us covering the entire process, also as to whether lacquer, spirit varnishes, or a special varnish is used for same, we would greatly appreciate same.—U. Paint Co. (Paints, Enamels, Varnishes, Puttles).

Marble-ized Finish

We would like to obtain a marble-ized finish on cast-iron ash trays which we manufacture.—N. Foundry & Stove Works.

Game Table Striping

We manufacture ping pong tables. We have heard of a transfer material that can be applied to a wood surface and leave a painted border after the outer material is removed. If you know of a manufacturer who makes this, please have him communicate with us.—S. K. E. C. Inc. (Kitchen Cabinets)

Humidity Devices

Your readers will, I believe, be interested in the announcement of Humidity Headquarters fittings. Being conveniently adaptable to work with compressed air, these fittings should be of interest to anyone connected with spray painting. With this in mind, I will appreciate an announcement of the setup, which I believe will interest a substantial proportion of your readers.

In reading the interesting article on "Eliminating Oil and Water from Compressed Air Lines" on page 9 of your November 1932 issue, it occurs to me that Mr. J. E. Swendeman, the author, would very likely be interested in the larger sizes of Humid-

ity Headquarters Kwikleen devices, which are admirably adapted to compressed air purification, especially where automatic draining is used.

On the other hand, if, as appears in the article, Mr. Swendeman is interested in the manufacture and sale of automatic draining devices, it is entirely likely that I can be of considerable service in promoting the application of his devices along with mine.—Walter J. Ottinger, M. E.

Patina Treatment

We would appreciate all the information regarding the new Patina treatment (process) used in the finishing of die-cast metal.—D. S. Co. (Wrought Iron Drapery Fixtures).

Finish Designers?

Is there an organization designing finishes for medium and high grade furniture exclusively, which operates entirely independent of manufacturers of finishing materials, and if so, will you please let us have the names of such organizations or people?—N. F. Co. (Furniture).

Stain for Persimmon

In January issue on page 31, at the top of the page (first column), a writer mentions a solution now on the market for dissolving water stain powder. Will you please tell me where I can get the very best solution that won't raise the grain on persimmon wood, which is a very hard wood.—H. H. W.

Polished Brass Finish

I am faced with the problem of preserving the luster of brass and copper with a coating of clear lacquer or varnish. The material must be weather-proof and resistant to heat and cold; also, it must not affect the luster of the metal. I have considered brass lacquers but am not sure as to their weather-proof qualities.—B. E.

New Rubbing Machine

In October, 1932, issue of INDUSTRIAL FINISHING, page 26, I notice an illustration of a rubbing machine. I have invented and patented a rubbing machine for a somewhat different purpose; however, it may be of distinct

(Continued on page 27)

PERMACEL
PAPER MASKING TAPE

To meet a preference of the automobile finishing trade for paper masking tape, PERMACEL enables remarkable speed and accuracy in applying. It is highly resistant to paints and lacquers. Taking a curve so readily, adhering uniformly in *all weather*, PERMACEL produces an unmatched razor-sharp edge, leaving no residue on any metal or wood surface.

JONFLEX
CLOTH MASKING TAPE

Its fine weave insures maximum flexibility. Nearly a half century of experience in adhesives, is your assurance that JONFLEX will hold uniformly and pull-off absolutely clean, leaving no trace of lint or fuzz. Use JONFLEX for color separations, anywhere that the spraying of paints and lacquers is done. Try it on your very next job.

INDUSTRIAL
CLOTH TAPE

Distinguished by slightly heavier texture and stiffer body, INDUSTRIAL tape is particularly suitable in spraying larger surfaces. It produces a keen edge and leaves the surface free of lint and fuzz. INDUSTRIAL tape is resistant to paints, lacquers and solvents, and like PERMACEL and JONFLEX, may be re-used with perfect safety.

REVOLITE tapes are supplied in widths from ¾" to 36" in 60 yard rolls.

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A Subsidiary of Johnson & Johnson
NEW BRUNSWICK NEW JERSEY

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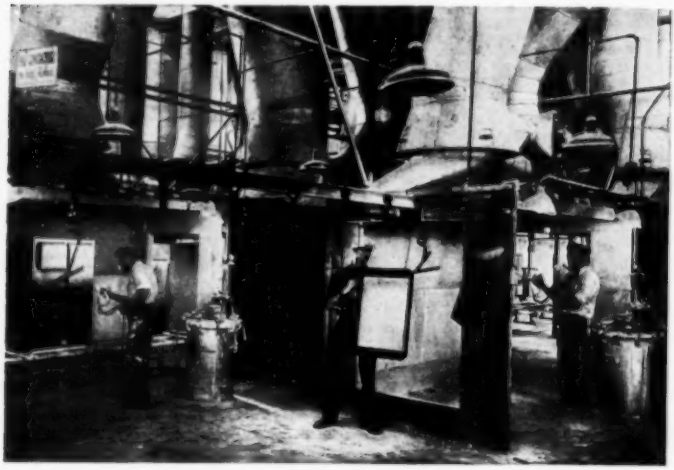

THE SALESROOM OF 1933

This year the sales of your product will be heavily influenced by its appearance when the prospective buyer sees it. Sales are made or lost in your Finishing Room. Old, obsolete spray equipment can't be expected to produce today's finishes; it takes modern DeVilbiss Equipment to do that and to keep orders coming through your department. A DeVilbiss equipped Finishing Room, such as the one above, meets the demands of 1933. DeVilbiss exhaust methods efficiently remove all dust and vapors. Working conditions are better. Proper safety lighting insures good work and reduces rejects in inspection. DeVilbiss Spray Guns can be quickly adjusted for each job. DeVilbiss Material Containers eliminate frequent interruptions for renewal of supply. To keep your Finishing Room up to date, talk to your local DeVilbiss representative. Or write.

DeVilbiss

THE DEVILBISS COMPANY · TOLEDO · OHIO

New York Philadelphia Cleveland Detroit Chicago St. Louis
Los Angeles San Francisco Windsor, Ontario

Direct sales and service representatives available everywhere

Try the new DeVilbiss Pro-Tek on your hands. Paint, lacquer, enamel and similar stubborn materials will wash off under running water. Send for free sample.

Yes! You can stop . . .

Aniline Dye Bleeding

by E. Perry

"The plaster walls of a bath room were previously finished in red. It was aniline red, I understand, and has bled through 26 coats of paint — applied by various painters. Shellac has been brushed on and then followed by several coats of flat paint and enamel, but still the red bled through. Finally, a steel gray paint was applied, followed by the usual flat and enamel coats, but the red persists in bleeding through. Isn't there any formula that can offset the bleeding of this red?"—Inquiry.

EVERY interior finisher and probably many factory finishers have at some time been faced with the problem of attempting to eradicate aniline dye from walls, interior trim and doors, or furniture, in order to prepare the surface for safe application of enamel or paint.

It is a difficult thing to do, and at best always carries with it some uncertainty as to how long the remedy may maintain its effectiveness. I have been told by others that on some jobs they could not hold back the dye on work where they had even removed the old finish down to bare wood, applied pure shellac and then a coat of aluminum paint; the dye eventually worked out and discolored the finished job.

Fundamentally, any one type of stain stopper would not be effective with all dyes, as will be obvious from the fact that some dyes are water-soluble, some spirit-soluble, and others oil-soluble. Quite naturally, then, the liquid vehicle of the stain stopper cannot be a solvent of the dyestuff it is intended to seal over; instead it is necessary to first ascertain the character of solubility of the dye coloring in order to choose the type of sealer that is non-solvent in each individual case. Quite a large range of dyes are soluble to more-or-less degree in both spirit (alcohol) and water, and these present the most annoying cases to overcome.

Suggested Formulas

All kinds of water stains, alkali stains, and similar, on plaster and wood surfaces, may be effectively and permanently sealed with a spirit varnish enamel procurable from most of the larger paint manufacturers; or you could make it yourself without great trouble. It is material similar to shellac but instead of lac you obtain Pontia-

nak gum from a varnish maker and cut or dissolve 4-lbs. of this into one gallon of denatured alcohol; do this in a closed container to permit of constant shaking to avoid lumping together of the gum, and at the same time to more readily dissolve the gum by any manner of agitation. Grinding into this 4-lbs. of Titanox, which is a very strong covering white pigment, not only improves the sealing properties of this varnish but also, due to the white color, will immediately show up any discoloration working through. Because of its alcohol solvent this type of sealer could not be successfully used over a spirit-soluble-dye stain.

Water Shellac

The next type of stain stopper would be water-shellac. Gum shellac (lac) dissolved in strong ammonia water dries more slowly than spirit varnish just as water does not evaporate as quickly as alcohol. When it has completely dried it sands practically as well as regular shellac varnish. For wood finishing or coating over, it, of course raises the grain of the wood and requires to be sanded down. Water shellac permits very easy brushing out because of its slowly setting up. Some stains are more quickly scuffed up by ammonia water than by other alkaline water solutions, such as caustic soda or potash, sodium carbonate, or borax. In that event a typical formula for water shellac would be this:

Borax .....4-oz.
(or Sal-Soda .....2-oz.)
Hot water .....1-gal.
Bleached shellac (Lac).....4-lbs.

First dissolve the alkali in the hot water; then add the gum lac and heat to about 200°F., or just under the boiling temperature until dissolved. When cooled, strain through fine cheesecloth to eliminate any undissolved particles of gum, or any foreign matter.

Silicate of Soda

A third type of sealer sometimes resorted to is sodium silicate, preferably the N grade of the Philadelphia Quartz Co. Reduce two parts of this with one part of cold water. Apply this solution over the stained area and allow ample time for the water to evaporate, which will require at least overnight. Next day recoat with an ammonium chloride solution (of strength say 3-oz. Ammon. Chlor. in one gallon cold water) and permit this also to thoroughly dry off, by warming or a hot air blast if possible, but not to exceed 200° F. This will act as a binder or mordant of the silicate solution, the reaction rendering the soluble silicate of soda to become insoluble. After this is done any efflorescence or crystallization likely to ensue after the initial application of the silicate, may be washed off and no more should occur.

Casein Solution

However, I place greater reliance on an entirely different material which so far has proved altogether effectual in very stubborn cases. Dissolve 1-lb. of casein into 3-qts. of water, to which has been added four fluid ounces of aqua ammonia. This will produce about one gallon of solution, which may be strained free of any insoluble particles suspended or floating on top.

Apply this to the work previously cleaned as thoroughly as possible, avoiding unnecessary brushing which might drag particles of dyestuff out of the pores or elsewhere. On this account spraying is to be advised where such equipment is available and can be utilized. If sanding is

A WHITE SYNTHETIC ENAMEL

that is

and stays **WHITE**

ZAPON S-70

A new development of The Zapon Laboratories! S-70 . . . a *white* white to start with. ONE coat produces an opaque, permanently WHITE, permanently lustrous finish.

Zapon S-70 never turns cream, ivory or yellow. Nothing in its make-up can change its absolute *whiteness*. Time does not affect it.

You can dip, brush or spray. You can air-dry or bake. Zapon S-70 goes direct on clean metal (including galvanized or lead coated) . . . and, of course, on wood, too.

It is used in large quantities for refrigerators, kitchen cabinets, bread and cake boxes . . . for every product that must be white and *stay* white with only ONE coat. You can reduce S-70 25% with thinner.

Zapon S-70 is quick. It is economical. It makes sales of your products faster, easier, more satisfying.

• **ASK FOR SAMPLE** •

Send us your name and address and we will gladly furnish you with a liberal test sample of S-70. Try it next to other white synthetic enamels. Whenever you are confronted with any enamelling problem, consult The Zapon Laboratories at no cost to you.

"The Standard of Quality Since 1884"

THE ZAPON COMPANY

A Subsidiary of Atlas Powder Company

Stamford ZAPON **Connecticut**

necessary, this should be done very lightly to only remove coarse nibs; it is advisable to avoid any sanding of the first coat and only such light sanding of the second coat as might be essential to merely smooth off the surface. Obviously, care must be exercised to avoid cutting through the sealer coat. From this point, the work of refinishing can proceed in regular manner.

Cheap Refinish Job for Automobiles

ONE of the most serious problems we have had to solve in recent months is to give our customers a satisfactory job of refinishing cars at a price they are able to pay. We prefer to do a first class job at the usual price, but many car owners who are in the market to have a car refinished feel they cannot pay what that costs, so we have developed a job that gives a good appearance and satisfactory wear at less cost. Of course we make no claims that it looks as well or wears as long as our standard job, but it meets the demand for a cheaper finish.

The use of a sealer is one thing that has helped us to do this. The sealer coat is especially good to use over damaged spots (after they are cleaned), as it seals the metal and permits us to build up the finish more satisfactorily. It enables us to reduce the number of coats of lacquer. We figure that the use of a sealer reduces the cost of the job 20%—a considerable saving. It also eliminates dull spots and prevents them from soaking and cracking, as they would with lacquer alone. It imparts a gloss under the lacquer that takes less labor in polishing the finish job. In fact in the cheaper job, polishing can be dispensed with altogether.

Then instead of the customary four or five coats of lacquer, we use a synthetic lacquer that will build up to a fair finish in two coats. So by saving one fifth of the cost by using sealer, by using synthetic lacquer that requires fewer coats, and by doing away with the labor of polishing, we are able to meet the demand for a cheap job and still get a fair profit on the work.—GEORGE H. CARY (Foreman Finisher).

An improved finish-remover leaves the treated surface clean and free from wax.

Handy electric mixers and agitators to fit any container are available.

VARSEAL
THE LATEST THING IN SEALERS
Equally Satisfactory Under Varnish or Lacquer
A Distinct Saving Over Shellac
THE GILBERT SPRUANCE CO.
Richmond and Tioga Sts. Philadelphia

Enameling Small Articles with Whirling Machine

by Leon J. Barrett

THE METHOD of coating small articles by using a "whirling" machine like or similar to the one illustrated on this page, when carefully carried out, produces an exceedingly thin even film of enamel finish. It is so effective that tapped holes are coated but never clogged; sharp machined corners do not emerge with a fillet of enamel. From the machine, articles may be spread to dry or bake according to the requirements of the material used.

The container is filled with articles. Only enough coating material to cover the parts completely enters through a valve; all

unused excess comes away as the machine starts, leaving only the predetermined thickness of film. Every corner and crevice is thus uniformly coated. Average articles are processed in bulk and go directly to the oven in trays for baking without stringing or hanging. Wire trays may be used for spreading to heal over surface contacts.

The whirling process of coating covers all surfaces, including inside or hidden areas. The cleanliness of this process is remarkable because there is no dripping on leaving the machine. The whirling machine has a large hourly capacity according to the size of machine used and occupies small floor space.

Materials drawn from a pipe into the machine may be used for coating, also saturating, cleansing, etc. Any extracted excess is drained and may be pumped back into the machine or to the supply. As there is no waste, costs may be accurately figured. Care in handling or racking when necessary will improve the quality of work. Some excellent coating is done in plants where experience has developed experts. I make mention of bulk handling which anybody can turn out with this machine given the right material, once the process is understood.

Type of work

Articles weighing several pounds each, provided they can enter and be whirled in fair balance in a centrifugal bowl or container, may be placed to the full capacity of the strong containers used in the heavy-duty machines. The high factor of safety provides strength far beyond the load capacity. The speed of the machine is calculated and permanently established by the constant speed of the carefully designed built-in motor.

Caution in the design has followed each move of the operator of these machines with positive interlocking safety features to prevent carelessness, the result being a highly productive, easily operated and safe machine for the processing of light or heavy material.

It would be difficult to enumerate all the different articles that are being coated in this type of machine; for example, I might mention golf balls, springs, camera parts, skid chains, toys, a wide variety of automobile accessories, bolts, nuts, screws, buttons, hinges, valve handles, and innumerable articles of hardware. This represents the general character.

We have not been as successful with wooden parts thus far as we hope to be in the near future. It has been somewhat difficult to obtain the excellent finish usually required on most wooden articles. We are making headway in our research department and hope soon to be able to make recommendations to paint manufacturers for a centrifugal paint for wooden articles. It was necessary at first for us to do some experimenting because the character of ordinary enamel had to be changed for this machine. While no more expensive than other enamels, centrifugal enamel is slightly different. There are also a few little kinks about the machine that make it work satisfactorily, once its operation is understood.

Small Paint Sprayer

THE ROTARY compressor type of electric paint sprayer, so convenient to take anywhere one chooses, provided he can hook onto a 110-volt line, undoubtedly has won a place in industry which it

can claim permanently as its own. Whatever the limitations of such a set of equipment, as against some which are conceded to be better, one cannot help noticing how conveniently it gets down into all the corners, and how speedily it operates in the hands of a competent man. The fact that such sets of spraying equipment have been made available, and are fitted with universal motors capable of being used on either an AC or a DC line, gives one further insight into their popularity.—J. H. W.

Fluid Tinting Colors

A CHANGE is being made in the way tinting colors are put out. Some of the leading manufacturers have already put this into effect and I suppose, in time, most of our colors will come that way. For those who mix their own colors and tints of it will also make a change, such as getting used to the weight and strength of the liquid colors.

There will be some advantage to the new colors in regard to preventing waste. The old time colors came in tight cans; after being opened there was a large amount of skin on top and sometimes it was hard to remove all of the color up next to the lid. There will also be a saving in thinner used to break up the color. In order to use the old paste colors, it was necessary to break them up with thinner before mixing. The new colors may be used as they come from the can, without any thinning and, if care is taken, without much waste from skinning over. These colors are being put up in gallons, quarts, and half pints.—J. K. C.

Improve your finish!!

You can do it with . . .

#1900 WATEROIL

Additional *"Unquestionable Quality"* Products:

Wateroil Stains
Quick Drying Fillers
Lacquers - Sealers
Thinners
Lacquer Shading Stains
Stain Powders

AS A FINAL clean up polish and as a rubbing oil. Miscible in water. Completely eliminates bluish bloom or haze. Leaves no finger marks. Does not accumulate dust or dirt. Costs less than ordinary rubbing oils.

V. J. DOLAN & CO., Inc.

1830-32 N. Laramie Ave. Chicago

Automobile Refinishing

by H. R. Stewart

A MYRIAD of troubles lurk in ambush for the unwary automobile finisher. The most common ones are chipping, blistering, cracking, premature dulling, and rubbing through of the lacquer enamel after a few polishings.

In analyzing the failure of a finish, we will find, if we go back over its history, that in numerous cases normal care was not taken to insure good results. For example, the metal or the old finish may not have been cleaned properly, or care was not taken to select the proper materials for the work.

Another factor which is often responsible for grief is that of price. When a low price has been quoted, corners have to be cut wherever possible, so that a loss will not be shown by the shop. It is on these cheap jobs where the greatest danger lies.

Two Ways to Cut Costs

Two systems are in common use to effect cost reductions for this cheap refinishing work. These are, 1) the use of cheaper materials, and 2) the use of regular quality materials, but a reduction in the number of coats applied to the car.

If cheap materials are used, care must be taken to see that the life of the material is not sacrificed to such an extent that the finish will become brittle. If this happens, any slight impact, such as road stones or gravel striking against the finish of the car, will cause the finish to chip off at these points of impact. Also cracking or checking will occur after a relatively short period of exposure. There are times though, when this type of material may be used without fear of a "kick-back."

Cheap Materials

Some refinish shops have a good volume of business built up with the vacant-lot used-car dealer. These dealers have numerous cars that only need a good looking finish to bring a much better price. The dealer will ordinarily ask for a good looking cheap finish, durability being no object so long as the finish stands up for a few months. It is for this type of work that these cheaper materials will be satisfactory, as they will normally rub down to a surface easier and in a shorter time—

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Unexcelled

ALCOHOL RESISTANCE!

Full Body

1834
A. R.
CEL-U-LAK

Smoothness

Hard and Tough

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12900 Berea Road Cleveland, Ohio

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THE NEW FINISH

- CHECKLAC -

The border shows in natural size two patterns of the structure of a new, attractive, practical and durable two-coat antique checked lacquer finish.

It is inexpensive and may be applied on articles of metal or wood over clear or colored lacquer. Enhance the beauty of your products and increase sales with CHECKLAC.

Your inquiry is invited.

MAAS & WALDSTEIN COMPANY

Executive Offices and Plant

430 Riverside Ave. Newark, N. J.

Chicago Office & Warehouse
1115 W. Washington Blvd.

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2416 Enterprise Street

which in itself helps to reduce the finishing costs. This ease of rubbing is due to the inherent qualities of the lacquer, derived from its formulation.

The necessitated use of cheaper grades of nitrocellulose with higher viscosity than that used in regular motor car lacquers cuts down the percent present. This, in turn, automatically increases the ratio of gum to nitrocellulose, which makes it necessary to reduce the percentage of plasticizer used so as to maintain the hardness of film for satisfactory polishing. The high gum content film cuts down faster, giving an easier polishing but "shorter" film which is more susceptible to chipping and checking.

Dulling, Chalking, Rubbing Through

If the ratio of gum to nitrocellulose is increased too much, premature dulling of the finish will result. This is due to the fact that there is not enough hard nitrocellulose present to prevent the gum from chalking and weathering away. This, however, is not true of the newer type of synthetic lacquer resins, but these are much higher priced than the cheaper gums or resins which, of necessity, are used in the low-priced lacquers we find on the market now.

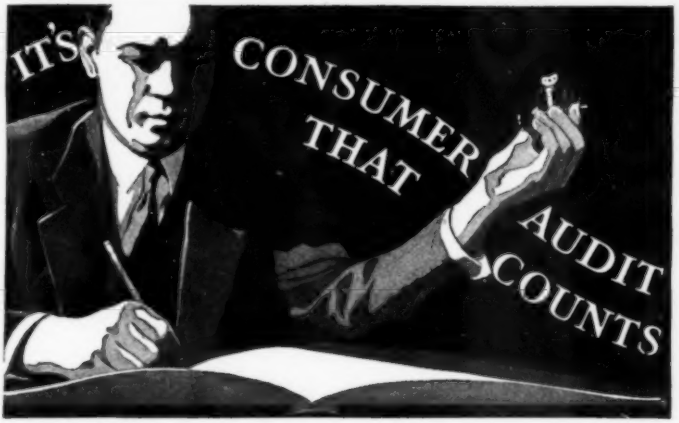
The easier cutting down and greater chalking of these cheaper lacquers also supplies the reason for the rubbing through of the finish after a few polishings. A good grade of lacquer will also rub through if it is abused by either skimping on the amount of material put on the job or by the car owner using too sharp a polish to keep his car clean.

Fewer Coats

We now come to the second and more satisfactory way, from the trouble standpoint, of reducing costs; the use of regular quality finishing materials and reducing the number of coats applied.

The automobile manufacturer, with minor variations, builds his finish as follows: A coat of pigmented oil-base primer is sprayed on and baked; then one or two coats of oil-base surfacer is applied and baked. The car is then sanded, glazed, and an intermediate primer of the lacquer type is sometimes applied; then anywhere from two to six coats of lacquer are sprayed on, depending upon the price range of the car being finished. These lacquer coats are usually force dried, after which, they are either sanded and mist-coated before polishing or brought right up to a polish, this again depending on the kind of car being finished.

This same schedule is the base from which refinish shop practice was developed. The car having been thoroughly cleaned is sanded smooth where necessary and bare spots are touched up with a lacquer metal primer. The practice of spraying a coat of sealer over the entire car has gained much favor. The claim being that this holds down the old finish and



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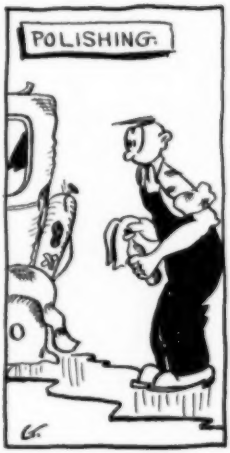
prevents any minute scratches (from the sanding operation or other causes) from opening up under succeeding coats. A lacquer surfacer is now applied, then the surface is sanded, glazed where necessary with a lacquer glazing putty, and two or more coats of lacquer enamel are sprayed on, followed by air drying and polishing.

Use Newer Materials

To cheapen the above schedule, we must look to some of the newer materials now in use. At present there are good lacquer primer-surfacers on the market. These have the adhesion to metal of a primer, and the sanding qualities of a regular surfacer. By the use of these primer-surfacers one operation is saved and still the quality of the finish is maintained. The revised schedule will then be: one heavy coat of primer-surfacer; air dry and sand; glaze where necessary; two coats of lacquer enamel; air dry and polish. This gives a good appearing low-cost finish without lessening the durability.



Clean Surfaces Thoroughly

If in the cleaning operation, care is not taken to be sure that all grease, wax, or oil is removed from the car, blistering or peeling will occur in the final finish. This is due to the grease or wax forming a film between the old finish and the new, which kills the adhesion between the two. This will also occur if care is not taken to select a good primer or primer-surfacer, one that has the necessary tenacity to cling tightly to the surface over which it is applied (either bare metal or old finish) or if the various coats fail to knit into the previous coats.

Well Balanced Thinners

All of the foregoing reasons for failure need not be laid entirely to the causes mentioned. The choice of thinners to be used has a great effect upon the type of finish obtained. The use of a well balanced thinner is recommended; one that is properly formulated for use with the lacquer enamels and undercoaters used in the system. If the thinner contains too high a percentage of nitrocellulose solvents it will bite into the undercoats, softening them in some cases clear down to the metal, after which all adhesion to the metal has been destroyed. In these cases the finish is extremely brittle.

Then there is the other extreme. If the thinners do not contain enough of these solvents there will be lack of adhesion between succeeding coats and we will have danger of blistering and peeling. This condition is more prevalent in the cheap thinners where it is necessary to formulate with quite large percentages of petroleum diluents in order to obtain a minimum cost. To insure the best results it is advisable to use those thinners that contain the correct balance of gum and nitrocellulose

solvents to work properly with the rest of the finishing materials. To do this it would be best to obtain the thinners from the same source of supply as the materials they are to be used with.

It will be found that if judicious care is exercised in the selection of the correct finishing materials and they are properly applied over a well prepared surface, there will be very little room left for trouble to creep into the finishing shop schedule.

Baking Ovens

IN THE February issue of INDUSTRIAL FINISHING, I notice a short item referring to electric ovens, and their desirability from the standpoint of obtaining a perfectly even heat at all times throughout the oven. Now, I have nothing at all against electric ovens. They are splendid equipment; but it does not always follow that they are the best. They might be best in one place and not best in another. In fact, there is no doubt that in certain places it is advantageous to have an oven which will use a specific kind of fuel. That is why some of our foremost oven builders stand ready to furnish ovens for baking finishes, or for any other baking operation up to 800°F., *and for any kind of fuel.*—C. O. C.

Decorated Tinware Novelties

IN SOME specialized fields of industrial finishing the artist and the artisan must work together to get the desired results. Where the two are combined in one person the problem is a simple one, but many a good finisher cannot decorate with free hand drawing, and may even be somewhat at sea as to what is what in color combination.

Several women have combined forces in Kansas City, Mo., and are producing gifts that are being eagerly bought by giftshops. The line is painted tinware and includes some distinctive and lovely gifts. One of these women is clever at designing new forms to be developed by the tinsmith; another is a wizard at mixing new or at least unusual tints, shades or hues of paint; the third is the commercial artist and saleswoman. The tinware is decorated in the Frenchiest of designs, free hand. The trade name is "Holly House," and the shop is located in an artist's studio.

The finisher insists there is nothing unusual in her finishing ideas, other than her selection of shades; she applies the paints with a spray gun after the tin has been minutely inspected for rust. All rust spots are sanded bright.

Trays, waste baskets, treasure boxes, fluted dishes for trinkets and bonbons, and ivy pot holders are among the articles offered. A typical tray in ivory yellow, with edges stippled in brown, has a perky brown engine and cars streaming across the center; a cream ivy pot has only a few green traceries suggesting vines encircling the top; some fluted trinket trays are a soft rose inside, with a silver gray exterior; a waste basket is tinted a soft blue-green never seen in ready mixed paints. —H. C. PATRICK.

Leave N. Bergen Varnish Corp.

Mr. William J. Harris, formerly Vice-President and General Manager of North Bergen Varnish (N.J.) Corporation, announces that he has resigned from the company. Mr. A. A. Morse, formerly in charge of publicity, also announces his resignation from the company.

Modern Developments in
Wood Finish Materials-II

by M. J. Pearce
The Glidden Company

Editor's Note: This installment deals with paste wood fillers, quick-drying fillers and sealers. Next month's article will take up clear and flat lacquers.

PRACTICALLY all of the woods used in furniture and similar articles have open pores which must be filled before a smooth finish can be secured. In the old days, many thin coats of shellac or varnish were applied and rubbed down so that most of the finish was removed except that in the pores. For modern production methods the paste wood fillers have been developed.

In the woodworking industry today, paste wood filler is applied to fill the open pores of the wood and to prevent succeeding coats of finishing materials from being absorbed. A good paste wood filler is composed essentially of silex, linseed oil, japan drier, and coloring matter. On most work, the filler is applied following the staining operation. It should be the same shade (or possibly a little darker) as the stain.

Reducing, Applying and Drying Fillers

Filler is usually reduced with naphtha, which should contain no grease, water, or sulphur. As a rule 10 to 12-lbs. of filler is used to a gallon of naphtha. The more open the pores, the more heavy the filler should be. Also, a little heavier filler coat should be used under lacquer than under varnish.

The reduced filler is usually applied by brushing, although it may be applied by dipping or spraying. By the brushing method there is less likelihood of unfilled pores. After the filler has flattened on the work, it is padded into the pores with a pad of burlap or hemp, using a circular motion. The excess filler is then cleaned off with a cloth, first wiping across the grain and then lightly with the grain, being careful not to pull the filler out of the pores.

Until recently, paste wood fillers required at least 48 hours to dry before the next coat or finishing material was applied. Through development work, the drying time of fillers was reduced 16 to 24 hours, and peak production demands brought about the fast-drying fillers that are sometimes referred to as "four-hour fillers."

Quick Drying Fillers

The four-hour fillers were developed primarily for use on conveyor lines where the padding-in and cleaning-off operations can be

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Practical Publications, Inc.
802 Wulsin Bldg., Indianapolis, Ind.

done immediately after the application of the filler. The use of conveyors in the finishing room is the exception rather than the rule, and these extremely fast-drying fillers are therefore not well adapted for the average plant. Four-hour fillers have all the qualities of 24-hour fillers, but they must be padded in and cleaned up immediately after application or they will set up so hard that this operation is almost impossible.

Several filler manufacturers have revised the four-hour filler somewhat by lengthening the drying time to about 12 hours, without sacrificing the easy working properties of a 24-hour type of filler. This 12-hour filler is fast becoming the standard in woodworking plants because it does dry to recoat in that length of time, but still can be applied and worked in a normal manner.

So-called combination stains and fillers have also been developed to stain and fill the wood in one operation. To the ordinary type of filler an extra quantity of coloring material is added. Obviously, the range of color is quite limited, and so this type of filler is used only where low cost is more important than an extremely sharp or clear color tone. High-grade furniture is seldom finished with a combination stain and filler.

Filler Quality Important

The filler is the foundation of any finish. Some fillers contain soap, borax, soda ash, weak alkali, and water solutions to partially saponify the oil and help hold the inert pigment in suspension. These materials give the filler a false body and prevent them from filling the pores properly. Another fault is a lack of permanence of color after wood lacquer has been applied. If the filler is not bone dry, a bleeding action frequently takes place, the finish taking on a muddy appearance and the filler turning gray in the pores.

If the proportion of color or the character of the color itself is not right, the same grayish trouble develops. Wood lacquer is a natural solvent of oil-soluble or spirit-soluble colors. If these are present in the fillers, the powerful lacquer solvents are likely to bleed them out and leave the gray silex showing in the pores.

Many of the wood fillers which gave good results under varnish are unsatisfactory under lacquer because of the faults mentioned. Several manufacturers have improved their fillers so that they are equally well suited for use under lacquer or varnish.

Building Coaters or Sealers

For some time after the advent of lacquer finishing materials, shellac was used as the sealer coat over the stain or filler. Since shellac required from three to five hours' drying time before sanding and since many of the lacquers dried quite hard in 30 minutes, there was a demand for a lacquer sealer that would dry much faster and sand much easier than shellac, and lacquer sealers were produced that could be sanded in from 30 minutes to two hours.

As a general rule, lacquer undercoats or sealers have proved successful under lacquer finishes. There are many varieties of lacquer sealers, however, depending upon whether durability, body on the work, easy sanding, or other properties are emphasized. These various lacquer undercoats may be grouped according to their

body building and sanding properties.

Thin Coats Preferred

A thin coat of low-solids sealer gives the best results, because undercoats of this type are in the sealer class; they more closely approximate the composition of a clear lacquer film, may be almost entirely sanded off in obtaining a smooth surface, and the resultant finish is consequently almost entirely clear lacquer. The medium-solids type of sealer which sands similar to shellac, but which never was greatly in demand on account of this feature, ranks next, in that it has good adhesion and toughness, coupled with fair sanding properties.

The medium-solids, easy-sanding class has been most generally used, due to the quick-drying, easy sanding and good building properties. The quality of the dried film is not as good, however, as that of the low solids or harder sanding medium-solids types. Recently, a high-solids type of lacquer sealer which sands fairly easily has been developed. This material leaves a good protective film for application of the final coat.

Another type of lacquer undercoat consists of the shellac-nitrocellulose quality, which is exceptionally good in that the film is tough but sands fairly easily. This type has excellent adhesion and has very good building properties, due to the high solid content imparted by the shellac. This type of sealer, however, requires longer drying periods before sanding, usually from three to five hours, and consequently has not been generally adopted.

Another class of lacquer sealer brought about by fast production schedules is adaptable for use under varnish. It is essential that a lacquer sealer be formulated to give good, durable results under varnish. The sealer must be very fast drying, preferably of low solid content and fairly easy sanding. The user of sealer under varnish must permit sufficient drying time to allow the major portion of the lacquer solvent to evaporate from the film before the varnish is applied, otherwise the solvent tends to work outward through the varnish film and will eventually cause brittleness.

ROVAR; Not "Rolox"

In the "What's New" department of Feb. issue, page 36, under the title "Clear Durable Waterwhite Varnish," a new finishing material was announced by the Rowe Paint Co., 43-42 Tenth St., Long Island City, N. Y. It was mistakenly called "Rolox." The correct name of this new material is ROVAR.

Roxalin Flexible Lacquer Co.

Robert V. Kirk has been elected secretary of the Roxalin Flexible Lacquer Co. of Long Island City in recognition of his services. He has been chief chemist of this firm for several years.

M. A. Dorian has been promoted to the position of Chief Chemist to take Mr. Kirk's place.

Hilo Elects New Directors

At the Annual Meeting of the Hilo Varnish Corporation, held at their office on February 16, 1933, Theodore H. Kleine and Patrick B. Healy were elected to the Board of Directors.

Mr. Kleine has been connected with Hilo since 1912, during all of which time his activities have been in the Credit Department of which he is now Manager. He is quite active in credit association work in the Metropolitan District and is at present also a director in the Paint Allied Industries Group of the New York Credit Men's Association.

Mr. Healy is an attorney with offices in Boston and New York. He is a son-in-law of the late John H. Schumann, former Chairman of the Board of Hilo Varnish Corporation.

How to Ebonize Light-Colored Hardwoods—II

by E. Perry

Last installment of a 2-part article which reveals practical methods and formulas for producing imitation ebony from several kinds of light-colored hardwoods

A RECENT DISCOVERY in intensifying black solutions is reported by the Society of Chemical Industry. It is apropos to the subject at hand, therefore shall be included herein to make this article as complete and comprehensive as possible. The discovery alluded to, pertains to the usage of vanadium as catalyst, the same exerting a far more energetic action than that of potassium chromate or a decoction of logwood. A few drops of a solution of ammonium vanadate will convert a large quantity of a decoction of galls into a deep black stain which, it is reported, cannot be destroyed completely by any known means. Another formula quite similar to the maple stain above, is reported by the S. C. I. as follows:

Aniline Chloride	8-lbs.
Potassium Chlorate	4-lbs.
Water	10-gals.
Hydrochloric Acid	½-lb.
Ammonium Vanadate	70-grains.

Before departing from the foregoing section devoted to acid or chemical stains, it should be mentioned in conclusion that the water-soluble-shellac stains are not recommended, therefore not described for the main purpose under discussion, because the fairly large proportion of shellac utilized in that type militates against deep penetration of the stain into the wood—undoubtedly caused by the shellac solids clogging the minute openings in the wood by which absorption is accomplished.

Aniline Penetrating Stains

The next class are the aniline penetrating stains—not the ordinary oil-soluble anilines using benzole (and) or solvent naphtha for solvent and diluent, but a strictly high-grade stain of exclusive character—one that holds thoroughly in suspension, does not show streaks or laps, and dries promptly without tendency to smut when finished over.

Because of its being in a class by itself, only one formulation need be submitted. This product does not raise the grain of the wood unless the wood is "green," in which case it is affected to only a slight extent. It is very penetrating, strong staining, and pro-

duces jet-black color. It is a finishing stain and should be used for impregnating and finishing completed turned and carved woodwork. It does not have to be wiped, and it seals the pores of the wood preparatory to any finishing coating to be subsequently applied. Although this is a proprietary formula, the materials specified are all readily obtainable, and the compounding of the mixture can be easily done by anyone: Here it is:

Nigrosine dye .....16-lbs.
to be dissolved into
Denatured alcohol .....12-gals.
Methyl acetone .....12-gals.
then add
Nitro-benzol (nitro-benzene).3-gals.
and finally add
Spirit varnish .....5-gals.

The dye should be the jet black type; not the blue-black nigrosine. The spirit varnish also is a better grade than is generally made up in the plant. It is a quick dryer, and very tough. Its main requirement is for dipping rulers, broom handles, etc. The formula is:

Denatured alcohol .....25-gals.
Toluol .....12-gals.
Manila chips (clean).....75-lbs.

This is a cold-cutting exactly the same as in cutting shellac varnish; the solvents are first put into the mixer; then, while stirring, the varnish gum is added. Agitation is continued several hours until all gum is dissolved. The product should be transferred to a wood tank with cover, or to a closed wooden barrel on end, with spigot, for settling of dirt and other foreign matter, before using.

Pigment-Type Stains

Now we come to the last class of product—the oleo-resinous pigment-type stains. These are virtually solid coatings (i.e. for

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ebony), but the product next to be described does possess fairly good penetrating properties unless the wood texture is too compact; it dries perfectly flat and without raising the wood grain. This particular item is worthy of trial on finished turnings, and for this purpose I would suggest immersion of such duration as will be found to provide sufficient penetration of the surface for a practicable and economical ebonized finish. The stain formulation is this:

Super-spectra carb. blk.....16-lbs.
Coach grndr's (shel.) jap.....9-gals.
Steam-distilled wood turp.....9-gals.

The pigmentation specified for jet black color is a grade probably not to be obtained in paste form as a stock item from any paint manufacturer, because the customary black colors in japan (coach colors) are lamp black, bone (drop) black, and combinations of both. However, the above carbon black in shellac japan could be ground special by any of the larger paint makers; the reduction with turps should be done by the finisher or the person doing the staining at the mill.

A Cheaper Method

A much cheaper material, not to be compared to the preceding nor recommended by the author, would be the ordinary pigment oil stain of which the following is a typical formulation:

Carbon black (ordinary).....8-lbs.
Raw linseed oil.....8-gals.
Brown (drying) japan.....16-gals.

The ultimate character of finishing of the work colored by any of the staining methods embodied in the foregoing résumé, is a matter to be decided at the shop. However, as ebony is perhaps more often finished dull than glossy,

some of the work probably could be given a wax finish, as not only appropriate to the article ebonized, but also for speedy and low-cost finishing work.

Black Paste Wax

Black paste wax would be necessary. Such material is on the market. The object of black wax is for use over black and very dark surfaces, and not for show, as the regular color waxes cause a grayish or milky bloom over dark stains. Although it is not recommended that the finisher make his own paste wax, the formula of same is given merely for his enlightenment as to its composition. The formula quoted is of goods carrying a minimum amount of dye essential to produce proper results without danger of crocking cloth, etc., coming in contact with it. It is this:

Carnauba wax	2½-lbs.
Ceresin wax	6½-lbs.
Oil nigrosine	1-oz.
Pure turpentine	2⅝-gals.

Letters - - -

(Continued from page 5)

advantage in the furniture business. The manufacturer, who is considering putting it out, saw the above mentioned cut, and would like to know more about it.

In conceiving this machine of mine I had in mind the waxing of automobiles, but soon heard that the "back and forth" motion of hand work is highly desirable in many ways, and the adaptibility of my machine so broadens its field that I soon found I had a whale by the tail.

My machine is adaptable for some part of furniture rubbing, but how much I don't know, as I haven't studied the requirements and possibilities of furniture rubbing. You will know more than I when I say that it is composed of a series of bands running in opposite directions. Moving the machine sideways effects the back and forth motion. It is designed to produce by speed the same results, and quicker, as pressure.

One feature of it in waxing is that the first band to pass over the surface can be saturated with wax, so that a surface can be waxed the same time it is polished, if so desired; also it will rub with an even pressure over a convex surface—convex in both ways. I may add, though you may not be interested in this valuable point, that the heat generated will allow a much heavier wax to be used than any now made; it will melt the wax and heat it on, and heat it in. An automobile so treated should retain its coat eight months or a year. The machine is electrically driven and can be made with the motor inside if so desired. —F. C. N.

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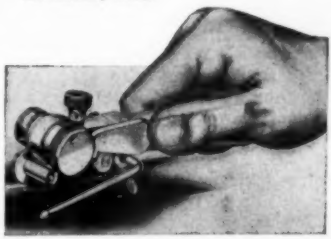

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EDITORIAL

Detecting and Imitating Genuine Antique Finish

The Metropolitan Museum of New York City has published a book entitled "Ultra-violet Rays and Their Use in the Examination of Works of Art," by James J. Rorimer, assistant curator in the Department of Decorative Arts, which includes information about the use of these rays in woodwork, furniture, and wood sculpture.

It states that, "the appearance of woods vary under ultra-violet radiation according to their age. In general, freshly cut, unfinished wood fluoresces but very little. The fluorescence of old wood is largely due to the patina it has received through the years. As a result it is particularly the surface finish . . . which is to be examined under ultra-violet rays."

Further, it states that these rays may be extremely useful in discovering traces of original patina or finish which are not to be seen in any other way. A chapter treats of the apparatus required for use of these rays, and describes actual laboratory experiments carried on at the Museum.

So much interest has been expressed both here and abroad in the possibility of using these rays as a means of determining the condition and age of works of art that this book seems to meet a definite need.

The skilled furniture craftsman of today tries to reproduce the finish of an antique as well as the design. One of the chief charms of old furniture is the patina (the surface appearance after long exposure). It is impossible to reproduce this exactly, of course, as age has so much to do with it, but present day manufacturers have gone a long way in their efforts in this line. It would seem that the ultra-violet ray examinations as described in this interesting book would be a help in this line, as well as in detection of different points that are important to the designer, manufacturer and finisher.

Correct Chemical Cleaning

Regardless of ideas to the contrary, ideal conditions in the preparation of metal surfaces for finishing require some variation of treatment in different cases. Just here is where many have gotten into real trouble. Their finishes and their finishing schedules were all right, but their preparation was faulty. Some one in charge reasoned that because a given method worked out well on

one product, it would also work on another.

Some manufacturers who produce large quantities of metal goods, but made up into various products, have mapped out a definite policy whereby this particular gamble is avoided. Their policy is very simple. They put each new product into the hands of a chemical company which specializes in this kind of work, and then hold that chemical firm strictly accountable for results. It naturally follows that the chemists will study each one carefully, and then recommend the best procedure and the best chemical to use in each case. The result is a rapid, thorough and economical cleaning and preparation of the surfaces for japan, lacquer or paint, with safety.

Custom-Made Paints

A definition you find in a book of "yesterday" gives you to understand that "paint is a mixture consisting of finely divided substances called pigments, held in suspension in a liquid called the vehicle." Though the old definition is still true in a sense, how inadequate it is. Most paints today are carefully engineered materials. Consider, as an instance, paints which have been specifically "built" for various industrial uses. For example, interior whites with special light-reflecting values; pipe enamels; engine enamels; enamels made to resist scratching, abrasion, water, steam or chemicals; metal preservative paints for all conditions; cement floor enamels.

When one wants a paint to fulfill a certain industrial duty in these days, it is no longer a case of "trying" this and that formula, but of using the one which has been developed for that particular purpose, by specialists.

New Paint Drums Easily Cleaned

One thing that has puzzled men in this industry for a long time is the cleaning of steel paint drums—doing it conveniently and being certain that they are clean before putting other material back into them. Various schemes and devices have been developed as aids to this end, but the very simple solution of a steel drum having a removable cover at one end remained for a long while in the background. It was sure to come eventually, and now we have drums with removable covers, giving an opening nearly 18-in. in diameter. It takes only a minute to seal the cover liquid-tight, and it can be pried off at will with a pointed tool. It can be re-sealed in the shop and, when provided with a new cover, can be used for re-shipping. The added benefits of being able to fill such a drum with less trouble, and to agitate the material within it more easily, are also apparent.

Color's Attraction Useful

Color as a means of merchandising new goods now plays an important part in one of the fastest growing industries in America—the oil burners industry. In place of the ordinary black painted oil burner of a few years ago, we see them today in colors, the two leading colors being green and red.

Commenting on this, one of our New York correspondents says:

"My attention was recently attracted to the value of color in

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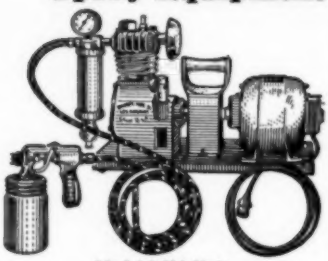

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the finishing of oil burning apparatus as I stood before the show window of a leading, Central New York heating supply house. Two oil burners of different makes were on display. One was finished in a beautiful soft green enamel; the other in a bright fire red. The green burner was radiant in its chromium trim, while the red heater was trimmed with black enamel. Both of these burners were unusually attractive.

"As I stood watching the effect of these colored burners on those who passed by, I was surprised to see the large number of people who were attracted by this display of color on an oil burner, even though this particular piece of merchandise will be placed in the basement of the home."

It matters little what the product may be, color, rightly used, will help sell it. The best proof of this statement can be found in the ever increasing use of colors; this is especially true when a new article is placed on the market. The correct use of color has proved to be a strong merchandising ally.

Painter, Decorator Catalog

Practically everything in the way of materials, supplies and equipment for the painter, decorator and finisher—from Acetone to zincs in oil—is listed in Catalog No. 57, recently released by Geo. E. Watson Co., 164 W. Lake St., Chicago, Ill.

Industrial Market Book

A compilation of basic marketing data especially designed to aid sellers of products consumed in the manufacturing industries to locate their markets more accurately and economically and estimate probable demand is offered to business men of the country in the Commerce Department's newest trade publication "Manufacturing Market Statistics." Copies of the report are obtainable at $1.00 each from the Government Printing Office, Washington, D. C.

Filler Wiping Material

Oscar Smith & Sons Co., Clearfield and C Streets, Philadelphia, Pa., announces two new materials for use in wood-finishing rooms—HRT (Hessian Rubbing Tow), and CJT a similar rubbing tow or filler wiper. Both of these materials are now being used successfully by several finishers of fine furniture, not only because the stocks are durable, but because they are not harsh and therefore will not scratch; yet, at the same time, they have enough body to cut and remove the filler as well as work it in. Their advantages over sea-grass, excelsior, and burlap filler wipers, from the standpoint of economy in dollars, operating time, etc., are obvious. Both types are in bales, thereby insuring clean unlittered shops and workrooms.

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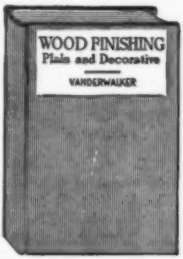

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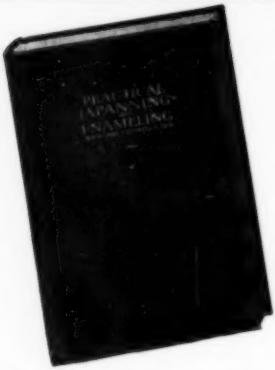

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